

1

WHAT IS CLAIMED IS:

1. A method of providing proportional currents in a
5 current mirror, the method comprising:

providing a current mirror having a reference current side
which provides a reference current, and a load current side which
provides a load current;

10 detecting an indication within the load current side of the
current mirror that the load current is decreasing; and

decreasing the reference current proportional to a decrease
in the load current.

2. A method as in claim 1 wherein detecting an indication
15 that the load current is decreasing includes detecting an
indicating voltage from the load current side of the current
mirror.

3. A method as in claim 2 wherein decreasing the reference
20 current further includes using the indicating voltage to decrease
the reference current.

4. A method as in claim 2 wherein detecting an indicating
voltage further includes:

25 detecting at least one input voltage coupled into the load
current side of the current mirror;

and computing the indicating voltage based on the at least
one input voltage.

30 5. A method as in claim 2 wherein detecting an indicating
voltage further includes:

detecting at least one common mode voltage from the load
current side of the current mirror.

35

1

6. An apparatus for producing a load current proportional to a reference current, the apparatus comprising:

5 a reference current generator that produces a reference current;

a load current generator that produces a load current proportional to the reference current;

10 a sense circuit for sensing at least one parameter indicative of the load current and producing a control voltage from said at least one parameter; and

a circuit that decreases the reference current proportional to the control voltage.

15 7. An apparatus as in claim 6 wherein the parameter sensed is a voltage.

8. An apparatus as in claim 7 wherein the parameter sensed is a voltage proportional to at least one voltage input to a load
20 driven by the load current generator.

9. An apparatus as in claim 8 wherein the load driven is a differential input circuit and wherein the parameter sensed is a common mode voltage of the differential input circuit.

25

10. An apparatus as in claim 8 wherein the parameter sensed is a voltage at a junction of load current generator and the load driven by the load current generator.

30 11. An apparatus as in claim 6 wherein the circuit for decreasing the current in the reference circuit further includes a voltage source electrically in series with the reference generator.

35

1

12. An apparatus as in claim 11 wherein the circuit that decreases the reference current decreases the reference current in inverse proportion to the control voltage.

10

13. An apparatus as in claim 6 wherein the reference current generator includes an impedance substantially equivalent to the load impedance.

14. An apparatus as in claim 13 wherein the reference current generator impedance includes a circuit which is a substantial duplicate of the load circuit.

15

15. An apparatus as in claim 14 wherein the circuit which is a substantial duplicate of the load circuit accepts the same inputs as the load circuit.

20

16. An apparatus as in claim 13 wherein the reference current generator impedance is an equivalent impedance.

25

17. A circuit to improve tracking in a current mirror having a reference current side and a load current side, the reference current side having a reference current side impedance and the load current side having a load current side impedance, the circuit comprising:

a semiconductor device through which the load current passes;

30

a semiconductor device through which the reference current passes; and

a circuit coupled to the output circuit which adjusts the voltage across the reference semiconductor device to match the voltage across the load semiconductor device.

35

1

18. A circuit as in claim 17 wherein the reference current
side impedance is adjusted to match the load current side
5 impedance .

10

15

20

25

30

35